

REMARKS

Claims 1-23 are currently pending in this application. These claims have been rejected.

Applicants discovered that using an amount of a non-dairy protein with an amount of non-pregelatinized, modified (e.g., thermally inhibited or chemically modified) starch, is a unique combination of ingredients that advantageously provides a cheese-substitute product with desirable characteristics comparable to that of 'real' or natural cheese. Although the cheese compositions according to the invention are non-natural, they have superior properties compared to that of "imitation" cheese compositions which are generally categorized as compositions that resemble cheese, but are nutritionally inferior to natural cheese. Thus, the compositions of the invention provide nutritionally equivalent, as well as similar manufacturability, functionability, and organoleptic qualities, even though the conventionally used casein protein component is significantly reduced. These are surprising results that until Applicants' invention, were undiscovered and/or un-resolved.

§ 103 Rejection

Claims 1-23 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Zallie et al (U.S. Patent No. 4,937,091) in view of Magnuson (Cereal Foods World, Feb. 1985).

Zallie et al. is directed to the use of amylopectin-containing starches to replace all the caseinate, for providing an imitation cheese. Specifically, the reference describes pregelatinized (e.g. jet-cooked, steam injected), debranched starch derivatives. (See col. 4, lines 19-22; and Summary section) The starches are enzymatically debranched or hydrolyzed. Zallie et al also describe debranching the pregelatinized starch using in particular, a heat stable debranching enzyme, *Bacillus pullanase*. (See col. 6, lines 23-29 and lines 39-47).

In contrast to Zallie et al., Applicants' claimed invention utilizes a non-pregelatinized starch. Zallie et al do not teach the use of a non-pregelatinized starch, but rather, it definitively relates to the use of a pregelatinized starch. Furthermore, the reference does not in anyway, suggest how to modify its formulation to accommodate a non-pregelatinized starch. Zallie et al., instead, describe in detail, the need to gelatinize the starch to disrupt the "associative bonding of the starch molecules....making the

molecule more accessible to the enzyme.” (See Col. 5, lines 46-52). Zallie et al. focus their efforts on ensuring optimal conditions for the de-branching step.

In a further distinction, the formulation of Zallie et al. is intended to be capable of having 0% caseinate. Applicants’ claimed invention is distinguished from the formulation of Zallie et al. because an amount of casein protein is maintained in the cheese composition.

Also, in some embodiments, Applicants’ modified starch can be a thermally-inhibited starch or chemically modified starch. Zallie et al. does not teach nor suggest how to prepare or use a thermally inhibited starch nor a chemically modified starch.

Magnuson discusses various food applications of vital wheat gluten. One category indicated by Magnuson is “Cheese Analogues, Pizza” and is stated to be suitable for synthetic cheese. Magnuson also mentions that the vital wheat gluten can be combined with soy protein, to replace about 30% of the sodium caseinate found in synthetic American and mozzarella cheese products. This amount of replacement however, would not result in cheese having acceptable melt or stretch, nor would it be nutritionally equivalent to a natural cheese. Applicants’ invention has been demonstrated to provide a nutritionally equivalent cheese composition, which also exhibits desirable melt and stretch qualities.

Applicants respectfully assert that Zallie et al. alone, or in combination with Magnuson do not and does not equate to the presently claimed invention; nor do the references, alone or in combination, render the presently claimed invention, obvious. As described above, Zallie et al. fail to teach or suggest the use of a non-pregelatinized starch. Accordingly, Zallie et al. is improperly relied upon as a primary reference. Zallie et al focus on the use of pregelatinized starch in order for an enzymatic debranching to occur. Magnuson does not cure this deficiency (to teach use of a non-pregelatinized), as it describes the use of vital wheat gluten to make the replacement for caseinate. Magnuson does not suggest a modification of the starch component, but rather focuses on the protein aspect of a composition as replacement for caseinate. As discussed above, the cheese substitute of There is nothing in either reference that suggests the use of a non-pregelatinized, modified starch in combination with a protein have both casein and non-casein, as instantly claimed. Even if the references were combined, there is no direct or even indirect teaching or suggestion in either reference that would suggest to a skilled artisan that the Zallie et al. starch could be changed to be a non-pregelatinized starch.

INVENTOR Huang, et al
Serial No. 10/715,734

The Examiner states that it would have been obvious to a person of ordinary skill in the art to have employed starch and protein choices made by Applicant, at specified ranges, to achieve expected results. Applicants respectfully disagree. The results achieved by Applicants are unexpected, as it would not have been obvious to a skilled artisan that a modified, NON-pregelatinized starch could perform (function) in a composition to provide a nutritionally and functionally equivalent cheese composition. Applicants were able to maintain the melt and stretch characteristics desirable of a cheese, as well as the nutritional value desired for a cheese composition. Since neither of the references teach nor suggest a substitute cheese composition as currently claimed, Applicants assert that the claims are non-obvious over the art.

Withdrawal of this rejection is respectfully requested.

Applicants respectfully request reconsideration and allowance of the claims as all rejections have been overcome. Early notice of allowability is kindly requested. Please contact the undersigned if it will assist in expediting prosecution of these claims.

Please apply any charges or refunds to Deposit Account No. 07-0900 and provide notification of such transaction(s) to the address below.

Respectfully submitted,



Arlene L. Hornilla
Reg. No. 44,776

General Mills, Inc.
P.O. Box 1113
Minneapolis, MN 55440
(763) 764-2265
(763) 764-2268 (Fax)